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H01R 13/422

(52) UK CL (Edition R)

H2E EDAA E253

(56) Documents Cited

GB 2271890 A GB 2067365 A GB 1571544 A

(58) Field of Search

UK CL (Edition Q) H2E EDAA

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(54) Abstract Title

Mounting pins in electrical plug

(57) A three-pin electrical plug has three pins 22 and a pin holder base 21. The pins each have a plate 25. The plate 25 goes into a slot 28 on the base, and a hook 27 on the base snaps over the pin to hold each pin securely. The base holds the pins while the rest of the plug is injection moulded.

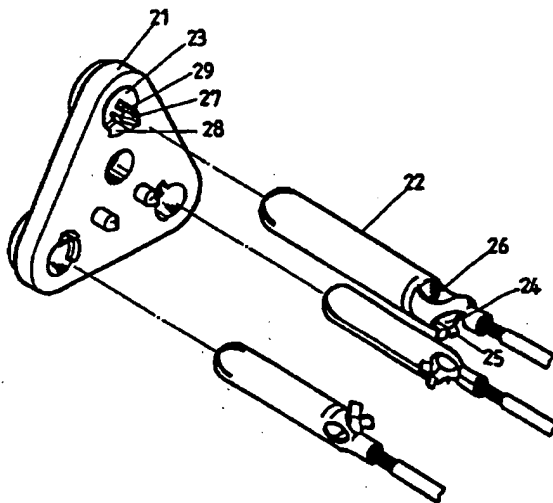


FIG. 8

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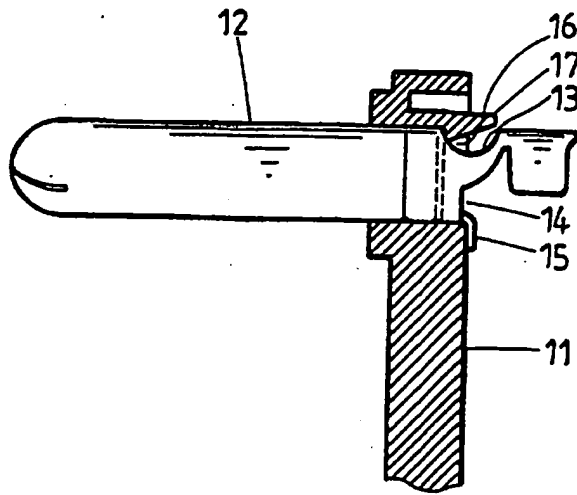


FIG. 1
(PRIOR ART)

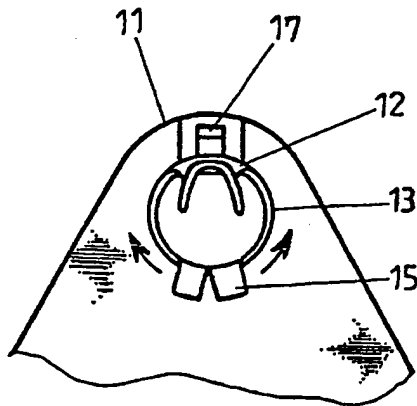


FIG. 2
(PRIOR ART)

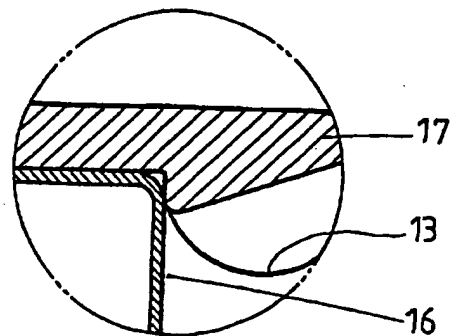


FIG. 3
(PRIOR ART)

2/5

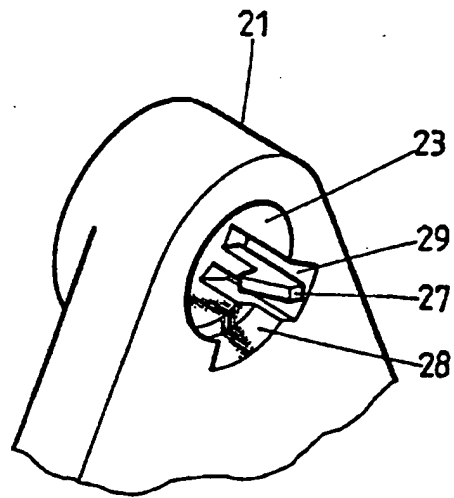


FIG. 4

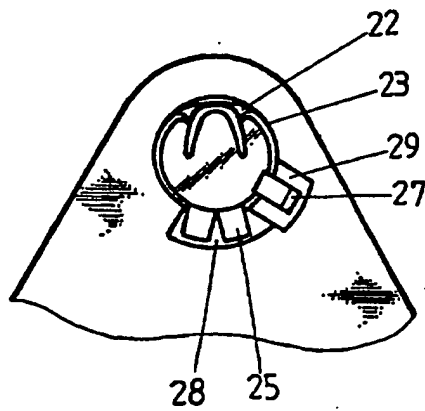


FIG. 5

3/5

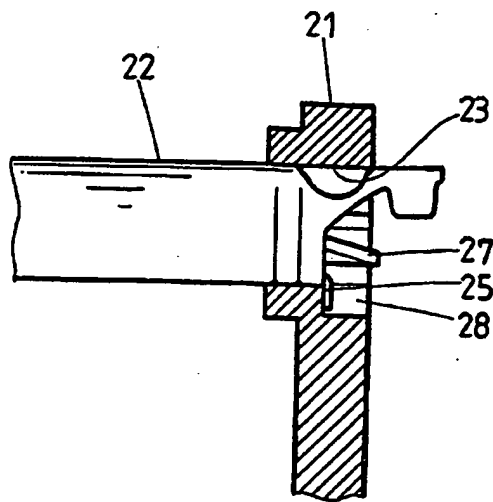


FIG. 6

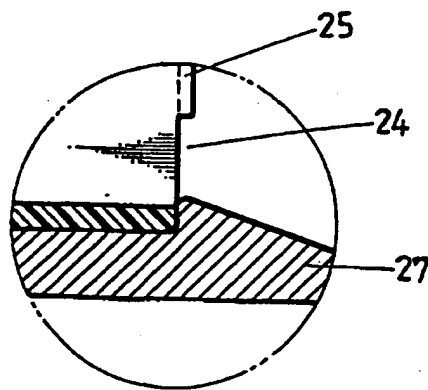


FIG. 7

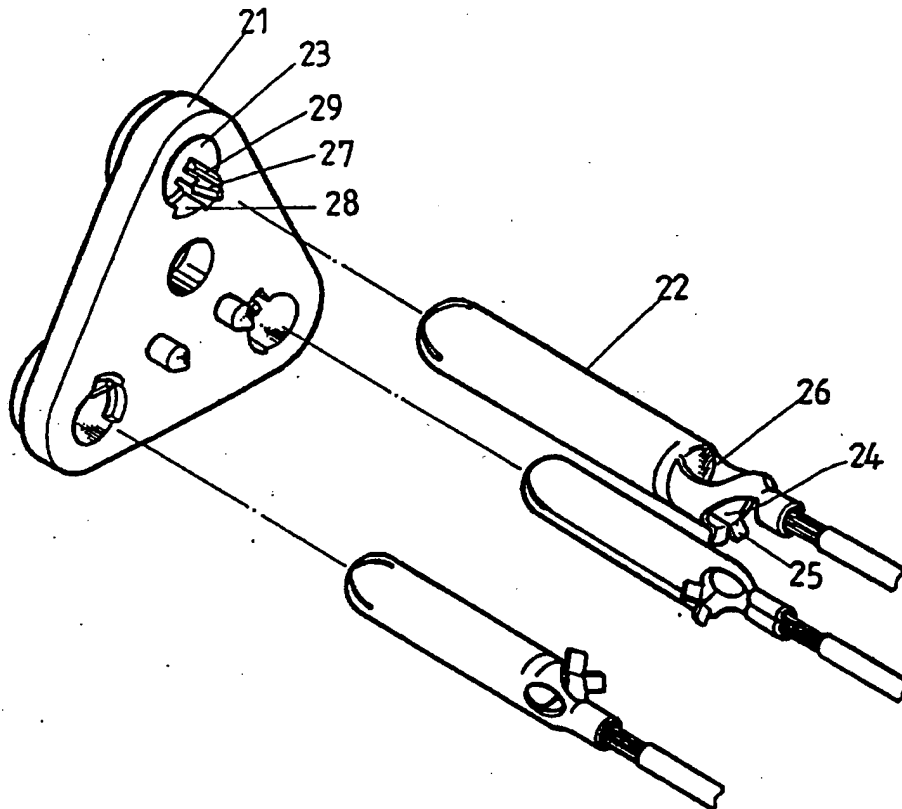


FIG. 8

5/5

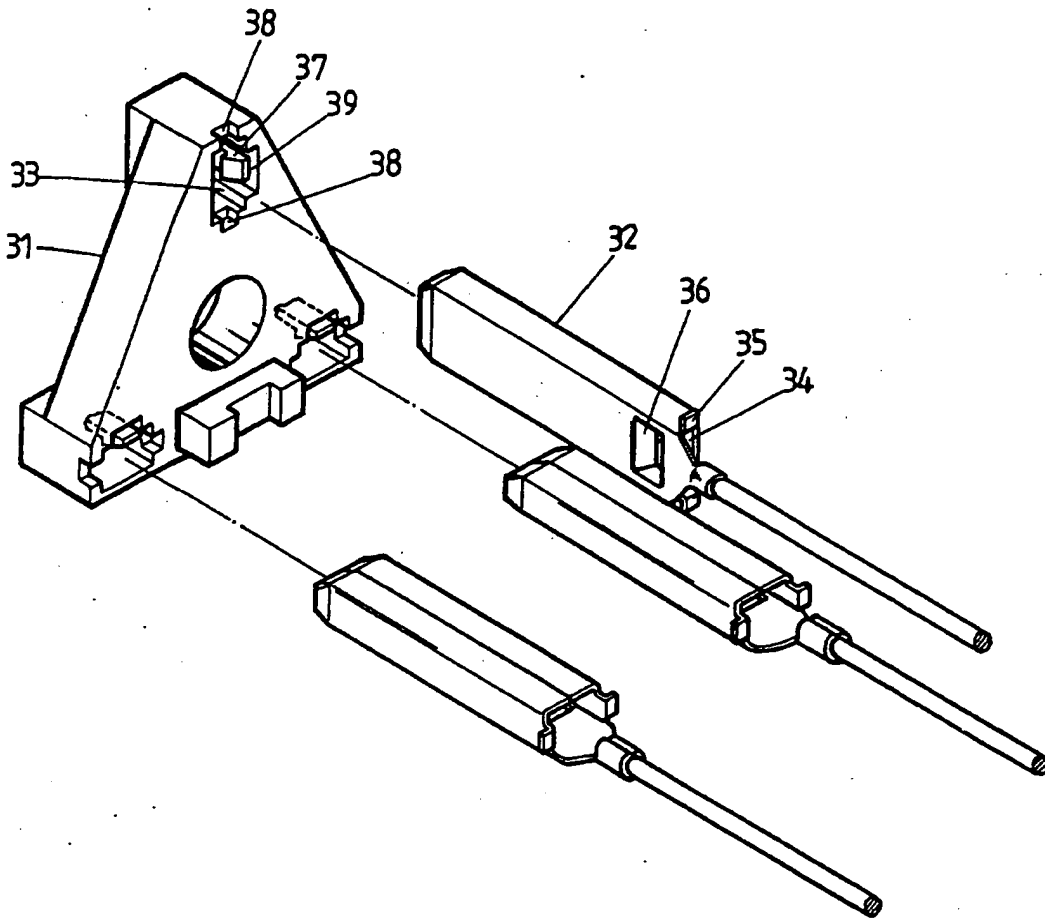


FIG. 9

Structure Improvement of Junction Box of Electrical Plug

This creation is concerning about the structure improvement of junction box of electrical plug. This creation consists of the method how an electrical pole holder base secured the electrical pole in the electrical plug. In the electrical pole holder base there are three holes formed like a delta for the electrical poles of the plug passing through. The electrical poles are press-rolled from metal sheet to hollow cylindrical pole. Both ends of the metal sheet edges are formed locating plates in V-shape. By means of this V-shape, the electrical pole can secure properly in the internal side of the holder base. The characteristic of this creation is that there is a cave located close to the pole pocket. A hook is located inside the cave near the neck of the electrical pole. This hook presses the electrical pole firmly inside the pole pocket. Besides, there are slots for the two locating plates on the pole holder base. These slots can assure the electrical pole has better hold down force.

1. Introduction:-

It is for safety that an electrical plug has three poles. Two of them are the power and neutral. The third pole is for ground purpose in order to improve safety. For an normal three poles electrical plug, it consists of three poles in delta position corresponding to three holes on electrical socket. It is safety for the proper pole goes into the proper hole.

2. General Application:-

With refer to the diagram 1, shows the general application method of an electrical plug before fulfill with plastic material. This application consists of a pole holder base (11) and electrical pole (12). The pole holder base has three holes in delta positioning as pole pocket (13) for the electrical pole to pass through. The electrical pole is press-rolled from metal sheet to hollow cylindrical pole. An empty opening is formed bi-directional by two ends of this hollow cylindrical pole. The frontal opening (14) is V-shaped as locating plates (15). By means of these locating plates which rest on the internal face of the pole holder base (11) to secure electrical pole (12) from moving to and for during the plastic injection process. The edge of the rear opening (16) looks like a curve because it is formed by press with round punch.

There is a hook (17) located beside the pole pocket (13) of the pole holder base (11).

When the electrical pole (12) is inserted into the pole holder base (11), hook (17) locked on the curved edge of the rear opening (16) and secured the electrical pole (12) on the pole holder base (11).

With refer to the diagram 2, shows the general application that locating plate (15) is rested on the surface of the internal side of the pole holder base (11). As the surface of the internal side is smooth and less friction, the electrical pole is very easy to rotate even a very slight external force. This easy motion results in poor accuracy and bad quality during plastic injection process.

With refer to diagram 3, shows another defect on design. The hook (17) is locked on curved edge of the rear opening (16) which shown a tangent point contact only. This locking method can not assure the stability of locking. It can not grantee the quality after plastic injection process.

3. Aim of creation:-

As the description mentioned above, there should be some better method to improve the defects. Therefore, as a creator, I have endure to examine, study and research. Finally, it comes to this creation "Structure Improvement of Junction Box of Electrical Plug." By means of this creative method, the quality and security of the electrical plug can be improved.

In order to give more effective idea on the construction, characteristic and method of approach of this creation, I would like to explain to you by means of the description diagram shown below.

4. Description of diagrams:-

- Diagram 1 Sectional view of the assembly method of electrical pole and pole holder base of general application.
- Diagram 2 Enlarged view of the locking plates construction of general application.
- Diagram 3 The defect of locking method used between electrical pole and electrical pole holder base of general application.
- Diagram 4 Three dimensional view of pole pocket on the pole holder base of this creation.

- Diagram 5 The plan view of the electrical pole locked up on the pole holder base of this creation.
- Diagram 6 The sectional view of the electrical pole locked up on the pole holder base of this creation.
- Diagram 7 The enlarged view of locking method used between electrical pole and electrical pole holder base of this creation.
- Diagram 8 The three dimensional view of the assembly method of this creation.
- Diagram 9 Another three dimensional view of the assembly method of this creation.

Description of Parts:-

(11) Pole Holder Base	(26) Rear Opening
(12) Electrical Pole	(27) Hook
(13) Pole Pocket	(28) Slot
(14) Frontal Opening	(29) Cave
(15) Locating Plate	(31) Pole Holder Base
(16) Rear Opening	(32) Electrical pole
(17) Hook	(33) Pole Pocket
(21) Pole Holder Base	(34) Frontal Opening
(22) Electrical Pole	(35) Locating Plate
(23) Pole Pocket	(36) Rear Opening
(24) Frontal Opening	(37) Hook
(25) Locating Plate	(38) Slot
	(39) Cave

5. Description of Construction of This Creation:-

This creation is concerning one kind of structure improvement of junction box of electrical plug. With referring to diagram 8, this shows the construction detail of this creation before the plastic injection process. It contains pole holder base (21) and electrical poles (22). As from the diagram, there are three pole pockets (23) in delta positioning on the pole holder base (21) for the three electrical poles (22).

With referring to diagram 4, the surrounding of pole pocket (23) of this creation has a slot (28) for locking plate (25) to rest inside. This purpose is when the locking plate (25) comes down to the internal side of the pole holder base (21), locking plate can sub-merge itself into the slot (28) and hold firmly. Beside the slot (28), there is a cave (29). A hook (27) is located inside the cave (29).

As the electrical pole (22) is press-rolled from metal sheet to hollow cylindrical pole. The both ends of the metal sheet edge formed an empty opening is formed bi-directional by two ends (24) and (26) of this hollow cylindrical pole. The frontal opening (24) is fabricated as two locating plates (25) in V-shape.

With referring to diagram 5 and diagram 6, electrical pole (22) is secured when locating plates (25) sub-merged into the slot position on the internal side of the pole holder base (21). This method secured the movement of electrical pole (22) and assure proper plastic injection process later on.

With referring to diagram 7, the hook (27) is located inside the cave (29) neighbor to slot (28). When the electrical pole (22) is inserting into the pole pocket (23), as soon as the locating plates (25) is sub-merged into the slot (28), hook (27) is lock up on the edge of frontal opening (24) but not on the edge of rear opening (26).

With referring to diagram 9, this is another three dimensional view of the assembly method of this creation. From this diagram which shows that in this creation, the electrical poles are press-rolled from metal sheet to hollow cylindrical pole. It also shows there are pole holder base (31) and electrical poles (32). Here, the pole holder base (31) has three pole pockets (33) which form each other as a delta shape for the electrical pole (32) to pass through.

Beside the edge of each pole pocket (33), there is a slot (38) for locating plate (35). Locating plate (35) will submerge itself inside the slot (38) when it comes down to the internal side of the pole holder base (31) and results in a firm holding. Beside the slot (38), there is a cave (39). A hook (37) is located inside the cave (39).

As the electrical pole (22) is press-rolled from metal sheet to hollow cylindrical pole. The both ends of the metal sheet edge formed an empty opening is formed bi-directional by two ends (34) and (36) of this hollow cylindrical pole. The frontal opening (34) is fabricated as two locating plates (35) in V-shape.

The hook (37) is located inside the cave (39) neighbor to slot (38). When the electrical pole (32) is inserting into the pole pocket (33), as soon as the locating plates (35) is sub-merged into the slot (38), hook (37) is lock up on the edge of frontal opening (34) but not on the edge of rear opening (36).

6. The benefit of this creation:-

1. As the explanation mentioned above, my creation has a slot (28) on the pole holder base (21) for the locating plate (25). When the locating plate (25) is press into the pole holder base (21) and sub-merged itself into slot (28), it is restricted from any left and right movements by slot (28). In this case, locating plate (25) provides a stability function to the electrical pole. It can resist any external force and reduce the vibration. This is a stability proof and guarantee a high quality production after the plastic injection process.
2. My creation also provide a cave (29) located at the suitable position neighbor to pole pocket (23). A hook (27) is applied inside the cave (29). When the hook is locked on the edge of the frontal opening (24), it is more stable due to larger surface contact area.

7. Conclusion:-

As the explanation above, this creation is a new design. This construction does not be seen in the market or any publish before. The perfect design and efficiency performance have its valuable. So here I submit my claim.

8. Claims:-

One kind of Structure Improvement of Junction Box of Electrical Plug. This includes a pole holder base and electrical pole. For the pole holder base, there are three pole pockets positioned as delta by each other which allow the location of the electrical poles. As the electrical pole is press-rolled from metal sheet to hollow cylindrical pole. The both ends of the metal sheet edge formed an empty opening is formed bi-directional by two ends of this hollow cylindrical pole. The frontal opening is fabricated as two locating plates in V-shape.

The characteristic of this creation is:-

Neighbor the pole pocket of the pole holder base, there is a slot for the locating plate. This slot is for the locating plate to sub-merge in when locating plate comes to the internal surface of the pole holder base. Inside the slot, the locating plate can provide more firm and secure holding. Besides, there is a cave located next to the slot. A hook is applied inside the cave. When the hook is locked on the edge of the frontal opening, it is more stable due to larger surface contact area.



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Claims searched: Only

Examiner: Paul Nicholls
Date of search: 18 March 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): H2E (EDAA)

Int Cl (Ed.6): H01R 13/422

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2,271,890 A (GEM MACHINERY) - See spring 511	The claim
A	GB 2,067,365 A (CRABTREE) - See protrusion 41	The claim
A	GB 1,571,544 A (NISSAN) - See figure 6	The claim

X Document indicating lack of novelty or inventive step
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A Document indicating technological background and/or state of the art.
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E Patent document published on or after, but with priority date earlier than, the filing date of this application.